Pavement Warranties – A Developing Trend

By Bob Brooks

The trend over the last several years nationwide, and indeed internationally, has been towards greater accountability of resources used by public agencies. Typically specifications that contractors must meet are placed on materials and workmanship and this goes a long way towards assuring a quality product but these do not address the important question of how the final product will perform over time. One method to address the long-term performance issue is through the use of performance specifications.

Performance specifications, unlike material and workmanship specifications, address the issue of product performance over time. Until the early 1990's performance specifications were used in a very limited way or not at all. In fact, the structure that the FHWA and the states operated under precluded the extended use of performance specifications. This has changed and the FHWA is now a supporter of the use of these specifications in contracting. Performance specifications have been in use in Europe for many years and several states have been using them since the mid 1990's with favorable results. Performance specifications are simply an assurance on the part of the contractor that the warranted item performs in a manner that has been pre-determined and agreed to in advance by all the parties to the contract.

Several contract items lend themselves to the use of performance specifications, landscaping, bridge painting, pavement striping, and of course paving. Regardless of the work item covered the establishment of performance specifications and their implementation can be approached in the same manner. This article will concentrate on the use of performance specifications for asphalt pavement.

Anatomy Of A Performance Specification

There is no "one-size-fits-all" when it comes to the development of performance specifications. In fact, their use to date shows that these have to be constructed in a way that meet the individual needs and concerns of the organization and parties involved. There is however a generic structure that any performance specification should have to ensure its effectiveness. The following are elements desirable to any performance specification:

1) Acceptance Criteria – this should be furnished by the contractor to the contract owner as a part of the bid process and should include a quality control plan and a certification process for the materials used on the project. This can address the certification of the contractor's testers, mix design methods, sampling methods, plant operations, lay down operations, density specifications, and the documentation process.

2) Performance Criteria – this should include the engineering properties to be used to evaluate the performance of the pavement, this could include rutting, cracking, smoothness, skid resistance, etc. and the procedures for evaluating those properties. Also included would be the length of time that the contractor would warrant the pavement performance. Many different warranty periods have been tried by various states, ranging from 2 years to 20, with the typical period running around 5 years. Its been established that periods much greater than 5 years tend to contribute to nervousness on the part of the contractors and the bonding industry and a reluctance to bid. Also established are the mitigation procedures to be applied by the contractor in the event of a failure of one or more of the performance criteria.

3) Evaluation Process – how the measurement of performance criteria will be accomplished and how often, example: yearly testing of the project pavement for the performance criteria by the contract owner (state, county, etc.) using a specified manner and provided to the contractor.

4) Dispute Resolution – a pre-defined process for the parties to get together and settle any disputes that occur during the construction process, the warranty process or its mitigation. This usually

involves the establishment of a conflict resolution team with equal representation from the contractor, the contract owner, and a neutral third party. All parties agree to abide by the decisions made by this resolution team. Interestingly enough, the experience of other states has been that of very little need for the resolution process with most disputes resolved in a cooperative manner.

One of the underling principals of establishing successful performance specifications is that the contractor is only expected to be responsible for those elements that he can control. To expect otherwise will doom the warranty process to failure. The most critical aspect in establishing performance specifications is to get all the parties together early on in the establishment process. This should include the contract owner, contractor organizations, the bonding industry and any other parties that have a significant stake in the process. As might be expected anytime a substantial change in the contracting process is proposed you can expect there will be initial resistance to the proposal. However, the experience of other states has shown that once the parties become comfortable with the process that many if not all of those concerns become non-issues.

Benefits To Be Gained

There are many benefits to be gained from performance specifications; following are some of the expected benefits for both the contractor and the contract owner.

1) Defines Success – by pre-defining performance criteria and monitoring the performance of the pavement over time it becomes very easy to know when a successful product has been achieved. This applies equally to both the contractor and the contract owner.

2) Balanced Risk – this simply allocates the risk and responsibility for the contract elements to the party that has control over those elements. An example would be having the contractor responsible for the construction techniques and sequences used to accomplish the work. This can contribute to an environment of innovation and increased efficiency.

3) Innovation Rewarded – placing the responsibility for the long-term performance of the pavement with the contractor and allowing him the ability to control many aspects of the construction process contributes to innovation, increased quality and greater potential reward for the contractor.

4) Non-confrontational Construction – By having a well defined and agreed to procedure for sharing responsibility and resolving conflict the relationship between the parties is transformed from confrontation to one of cooperation and trust between the partners.

5) Improved Quality – by allowing the contractor more control over the construction process and placing the responsibility for the long-term performance of the pavement with the contractor a better quality, better performing pavement has been the result. The motoring public is the ultimate winner in this process with improved satisfaction with the final product and reduced operating costs.

The warranty process offers the contractor the opportunity for flexibility and innovation and the potential for greater rewarded. The contract owner benefits from the reduced need for personnel such as inspectors, on projects, an important consideration in these times of reduced resources and lost expertise, less need for early pavement maintenance, and a better performing pavement. The public gains with a greater satisfaction from a better performing, smoother, and safer pavement.

Its also been found that the innovative techniques and procedures developed on the warranty projects also carry over to the non-warranty projects and thus contribute to improved performance and reduced construction costs for these projects as well.

Contract Structure And Cost

One method of structuring a warranty contract that has proven successful in other states is the A + B + C method. The contract is awarded to the overall lowest bidder based on a combination of three elements.

A) Unit Prices – as in a conventional contract the contractor supplies his per/unit price for all the materials specified in the contract documents. The extension of these per/unit prices constitutes the first or A element of the bid.

B) Time Costs – this is the element that the contractor can really become innovative with. The contract owner establishes a cost basis for peak commute and non-peak commute lane closure times and the contractor then analysis the work required and his approach to accomplishing that work and specificies the number of peak and non-peak closures he will require to complete the project. The contractor (if awarded the bid) is then paid for the number and type of closures specified in the bid. If the project can be completed with fewer closures than specified then that becomes an additional source of profit to the contractor.

C) Warranty Cost - this can be specified as a separate bidding element if desired and the contractor would then bid an amount that might cover his costs if he were required to perform any warranty repairs during the warranty period. If no warranty repairs are required then this also could become an additional source of profit for the contractor. Some states have chosen not to include this as a separate bidding element.

While there are several opportunities for the contractor to reap additional profit from these contracts keep in mind that the contractor is responsible for the performance of the project pavement for the specified period of time in the warranty. This could require him to take mitigation measures up to and including removal and replacement of a failed pavement at the contractor's expense. The contractor deserves to be compensated for this additional risk that he assumes. As with any other project, the contract is awarded to the lowest bidder. This fact acts as a mechanism to keep the potential for additional profits at a reasonable level for the work and risk involved. The experience to date shows that the typical increase in costs for these warranty contracts is running an additional 2 to 5 percent with initial contracts running higher and then costs coming down as the industry becomes more comfortable with the process.

These warranty contracts are not suitable for every project. They have primarily been used for paving contracts on the arterial system. They do require additional time to prepare and certain types of work are not well suited to the process. Not all contractors are willing to participate in these contracts and they do tend to tie up a contractors bonding potential for extended time periods. For these reasons it may be best to limit the number of these contracts to an amount that is sustainable to the industry. However, experience has shown that they can yield a superior performing pavement with reduced costs to the contract owner and they do place a greater emphasis on customer (public) satisfaction. Considering the potential benefits and flexibility of these warranty contracts they can be a win-win for all involved.